

Ocean gales and storms, April, 1930—Continued

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of lowest barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Highest force of wind and direction	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH PACIFIC OCEAN													
Patrick Henry, Am. S. S.	Formosa	Honolulu	26 00 N	178 40 E	Mar. 30	4 p, 1	Apr. 1	30.04	ENE	NNE, 8	NNE	NE, 9	Steady.
Emp. of Canada, Br. S. S.	Yokihama	Vancouver	50 34 N	148 54 W	do	8 p, 2	Apr. 2	29.35	W	W, 7	W	NW, 9	WSW-NNW.
Radnor, Am. S. S.	do	San Pedro	35 07 N	143 21 E	do	10 a, 3	Apr. 3	29.43	NE	S, 4	NW	NE, 11	SE-NE-NW.
Tamaha, Br. S. S.	San Pedro	Yokohama	33 55 N	141 30 E	Apr. 2	10 a, 2	do	29.45	ENE	ENE, 11	NW	NNE, 12	NE-N.
Petricola, Br. S. S.	Singapore	do	33 02 N	136 57 E	do	8 a, 2	do	29.90	ENE	NE, 9	NW	NE, 9	Steady.
Stuart Dollar, Am. S. S.	Nagoya	Los Angeles	35 03 N	142 05 E	do	2 a, 3	Apr. 4	29.56	NE	NE, 11	NW	NE, 12	NE-NNE.
Hamburg Maru, Jap. S. S.	Kobe	San Francisco	40 27 N	151 59 E	do	4 a, 4	do	29.69	ENE	SSE, 8	S	SSE, 9	SSE-S.
Pres. Lincoln, Am. S. S.	Seattle	Yokohama	37 05 N	143 00 E	Apr. 3	Noon, 3	Apr. 3	29.69	NE	N, 9	NNW	N, 10	NE-N-NNW.
Akagisan Maru, Jap. M. S.	Yokohama	San Francisco	43 12 N	141 00 W	do	8 p, 3	do	29.11	S	S, 9	S	S, 10	Steady.
Pennsylvania, Am. S. S.	Portland	Yokohama	43 39 N	152 15 E	do	Noon, 4	Apr. 4	29.56	WSW	S, 7	WSW	W, 9	SE-S-SW.
Maybashi Maru, Jap. S. S.	Yokohama	San Francisco	39 00 N	148 00 E	Apr. 9	6 p, 9	Apr. 10	29.17	W	WNW, 8	NW	NW, 9	2 pts.
Yomachichi, Am. M. S.	Hong Kong	San Pedro	36 10 N	152 40 E	do	10 p, 9	Apr. 11	29.61	SSW	WNW, 8	NNW	NW, 9	SSW-W-WNW.
Do	do	do	38 50 N	158 10 W	Apr. 15	4 a, 18	Apr. 19	29.95	NW	NNW, 9	N	NNW, 9	NW-NNW-N.
Tamaha, Br. S. S.	Yokohama	do	38 32 N	157 35 E	Apr. 10	7 a, 10	Apr. 11	29.05	SW	WSW, 9	NW	WNW, 11	WSW-W-WNW.
Wilhelmina, Am. S. S.	Seattle	Honolulu	42 20 N	136 27 W	Apr. 13	2 a, 13	Apr. 15	29.51	NW	NW, 8	SW	SSE, 9	N-NW.
Mishima Maru, Jap. S. S.	Yokohama	Victoria	35 09 N	140 43 E	Apr. 15	Mdt, 15	Apr. 16	29.50	NNE	NNW, 9	NW	NNW, 9	NNE-N-NNW.
Stanley Dollar, Am. S. S.	Sagay	Los Angeles	39 27 N	166 00 E	Apr. 16	2 p, 17	Apr. 18	29.38	E	SW, 8	W	W, 9	S-SW-WSW.
Frank G. Drum, Am. S. S.	Yokohama	San Francisco	45 20 N	169 30 E	do	5 a, 18	Apr. 19	28.76	SE	SW, 9	W	SW, 10	S-SW.
Aden Maru, Jap. S. S.	Iloilo	San Pedro	41 10 N	169 10 E	do	5 p, 17	do	28.99	E	SSW, 8	WSW	W, 9	S-SSW.
Olympia, Am. S. S.	Tacoma	Yokohama	48 45 N	170 30 E	Apr. 17	6 a, 21	Apr. 21	28.84	SE	ESE, 6	ESE	ESE, 9	ESE-SSE.

NORTH PACIFIC OCEAN

By WILLIS E. HURD

The average atmospheric pressure over the Aleutian Islands and the Gulf of Alaska for April continued with little change from that of March. The center of the Aleutian cyclone remained in the neighborhood of Kodiak, where the pressure was 29.72 inches, but over a considerable region which extended well into the Bering Sea, the average reading was below 29.80 inches. At the beginning of the month the Aleutian cyclone was rather deep and energetic over the Gulf of Alaska, the minimum barometer readings at stations along the coast from Kodiak to Juneau being close to 29 inches—slightly lower at Kodiak—on the 2d. After the decadence of this manifestation of the semipermanent northern cyclone on the 6th, no other deep depression appeared in the north until the 28th, when pressures dropped to 28.38 and 28.40 inches, at Dutch Harbor and St. Paul, respectively. This intensified cyclone lost energy rapidly, however, and entered Alaska on the 30th as a shallow depression.

The California-Pacific anticyclone reached its highest and steadiest development in the general neighborhood of Midway Island, where it was practically unbroken by intruding Lows. Between the Hawaiian Islands and the American mainland it occupied most of the middle latitudes, but was disrupted on several days by depressions of moderate energy, though of considerable size.

Barometric data for several island and coast stations in west longitudes, including Point Barrow on the Arctic Ocean, are given in the following table:

TABLE 1.—Averages, departures, and extremes of atmospheric pressure of sea level at indicated hours, North Pacific Ocean and adjacent waters, April, 1930

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Inches	Inch	Inches		Inches	
Point Barrow ¹	30.13	---	30.54	23d.....	29.68	29th.
Dutch Harbor ^{1, 2}	29.81	-0.02	30.22	17th.....	28.38	28th.
St. Paul ¹	29.76	-0.04	30.26	17th.....	28.40	28th.
Kodiak ¹	29.72	-0.08	30.28	12th.....	28.86	2d.
Midway Island ¹	30.17	+0.07	30.32	2d.....	29.96	26th.
Honolulu ³	30.06	0.00	30.17	28th.....	29.92	21st.
Juneau ³	29.87	-0.09	30.30	10th.....	29.13	2d.
Tatoosh Island ^{3, 4}	29.98	-0.06	30.26	10th.....	29.59	27th.
San Francisco ^{3, 4}	30.02	-0.02	30.27	4th.....	29.66	30th.
San Diego ^{3, 4}	29.97	+0.01	30.17	3d.....	29.77	30th.

¹ P. m. observations only.² For 29 days.³ A. m. and p. m. observations.⁴ Corrected to 24-hour mean.

After the considerable storminess occurring over the ocean during the preceding six months, April saw the North Pacific comparatively free from tempestuous winds. The majority of gales reported by our observers did not exceed force 9 on the Beaufort scale. Of the few more violent gales—forces 11 and 12—the most important resulted from a typhoon which passed the southeast coast of Hondo during the 2d and 3d of the month. At this time, although winds of hurricane force were experienced by vessels 100 miles or less south and east of Yokohama, no pressures lower than 29.43 inches were reported as read. This cyclone appeared as a depression between southern Japan and the Ogasawara Islands at the end of March, but did not become severe

until April 2. On the 4th it progressed rapidly toward the Kuril Islands, on the way causing fresh to strong gales east of Yezo, and was central somewhere south of Kamchatka on the 5th.

The only other known typhoon of the month was a small but violent storm which crossed the Philippines on the 18th-19th. The Bureau has no vessel weather report of this disturbance, but its history is given in the subjoined article by the Rev. José Coronas, S. J., of the Philippine Weather Bureau.

A weak depression, which seems to have formed south of Japan about the 8th, moved northeastward and had gained some considerable energy by the 10th. On this date, in about 38° N., 157° E., the British tanker *Tamaha* encountered the cyclone as a whole gale. Violent winds, up to force 11, were experienced until the morning of the 11th, when the storm abated. The *Tamaha's* lowest barometer was 29.05 inches.

Except in connection with the fluctuating disturbances peculiar to the Aleutian region, there seem to have been no other cyclones of importance west of the one hundred and eightieth meridian. Gales, however, were more frequent along the northern routes west of this meridian than east of it. From Japan eastward to about 160° E. most gales occurred during the first decade of the month, with a scattering few in the third. Between 160° E. and 180° the great majority were a product of the second decade.

In west longitudes no gales of force exceeding 10 have as yet reported. The early disturbance in the Gulf of Alaska, already referred to, created some rough weather north of the fortieth parallel on the 1st to 4th, the worst evidently occurring on the 4th, when a whole gale was encountered near 45° N., 140° W. On this date also Tatoosh Island, then on the extreme eastern edge of the huge cyclone, had a maximum wind velocity of 58 miles an hour (force 10) from the south.

On the 10th a depression formed in about 20° N., 132° W. and began working northward across the California-Hawaiian routes. By night of the 12th it lay off the coast between northern California and British Columbia, and by morning of the 15th had practically disappeared from the ocean area. It caused some squally weather and moderate gales during its northward passage, with a maximum wind force of 9 from the south-southeast on the 13th, near 34° N., 146° W.

About the 14th a moderate cyclone developed in middle latitudes, central near longitude 155° W. It moved rather slowly eastward and northward, spreading considerably in area for several days. By the 23d it lay principally over the Gulf of Alaska, where it remained as an individual disturbance until the 28th, when it became amalgamated with the intense cyclone then central over the eastern waters of the Bering Sea. During its course it acquired only moderate wind and barometric intensity, although fresh to strong gales were experienced in scattered positions between 30° and 50° N., 130° and 160° W., from the 15th to the 21st.

Few winds of gale force were reported from or near the Tropics. These few include moderate to strong anti-

cyclonic gales southwest and south of Midway Island on the 1st and 2d, and northerly of force 7-8 over and near the Gulf of Tehuantepec on the 6th and 12th. At Salina Cruz Tehuantepecers exceeding 45 miles an hour (force 8 and upward) were reported as follows: 7th, 60 miles; 8th, 60; 12th, 48.

The prevailing wind direction at Honolulu was from the east, and the maximum velocity was at the rate of 27 miles an hour from the east on the 12th.

Fog generally was more frequent along the upper steamship routes west of longitude 150° W., and along the coast of the United States, than in March. It was reported on 5 to 7 days in the various 5° squares in upper middle longitudes south of the Aleutian Islands; on 7 days between the fortieth parallel and the Kuril Islands; on 6 to 8 days off the California coast; on 4 to 5 days off the Washington and Oregon coasts; and on 3 days near shore at the mouth of the Gulf of California. Elsewhere, north of the thirtieth parallel, scattered fog occurred variously on from 1 to 4 days.

TYPHOONS AND DEPRESSIONS

THE FIRST TYPHOON OVER THE PHILIPPINES IN 1930: APRIL 18 TO 19

By Rev. JOSÉ CORONAS, S. J.

[Weather Bureau, Manila, P. I.]

The first typhoon that visited the Philippines this year was rather of a very small diameter, but very intense while traversing the Visayan Islands. The origin of this small typhoon is not clear up to this time. Its center was situated at 6 a. m. of the 18th about 60 or 70 miles to the northeast of Surigao moving west by north. At about noon of the same day it passed very near to the south of Guiuan, southern coast of Samar, where the barometric minimum 747.50 millimeters (29.43 inches) was recorded at 12.30 p. m. Then it passed at 6.40 p. m. close to the north of Ormoc, northern part of Leyte, causing the barometer to fall to 740.91 millimeters (29.17 inches). During the morning and first hours of the afternoon of April 19 it crossed the northern part of Panay Island near the northern coast, and south of Capiz, where the barometric minimum 748.35 millimeters (29.46 inches) was observed at 10 a. m.; the small typhoon was still intense and continued moving to west by north. From Panay the typhoon took a west-northwest direction, and probably filled up soon over the China Sea about 250 miles to the west of northern Mindoro.

The area of destruction of this typhoon was small, but in this area the damage caused by winds of a gale or hurricane force and by heavy rains was very considerable.

The approximate position of the center at 6 a. m. and 2 p. m. of April 18, 19, and 20 was as follows:

April 18, 6 a. m.-----	126° 15' longitude E., 10° 40' latitude N.
2 p. m.-----	125° 10' longitude E., 10° 55' latitude N.
April 19, 6 a. m.-----	122° 50' longitude E., 11° 15' latitude N.
2 p. m.-----	121° 50' longitude E., 11° 35' latitude N.
April 20, 6 a. m.-----	118° 40' longitude E., 12° 55' latitude N.
2 p. m.-----	116° 20' longitude E., 13° 40' latitude N.